HDVS

High Definition Video System

General Catalogue 1993

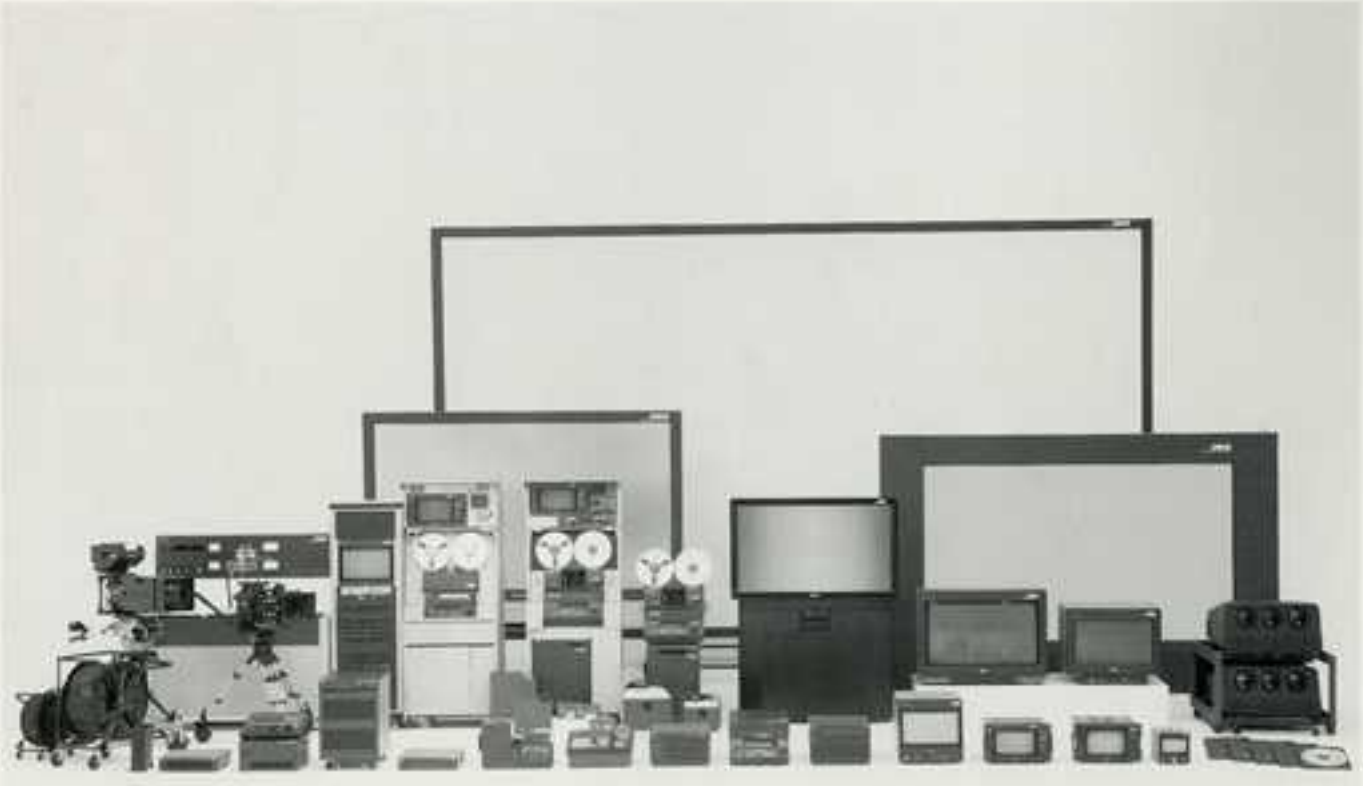
SONY

Sony's HDVS—Provides Stunning Picture Quality for a wide variety of applications

Sony has been providing the complete production and post production systems in high definition arena, which has already received worldwide acclamation. Despite being the acknowledged leader in high definition video, Sony has made a continuous effort to develop the finest technology necessary for making the system more complete.

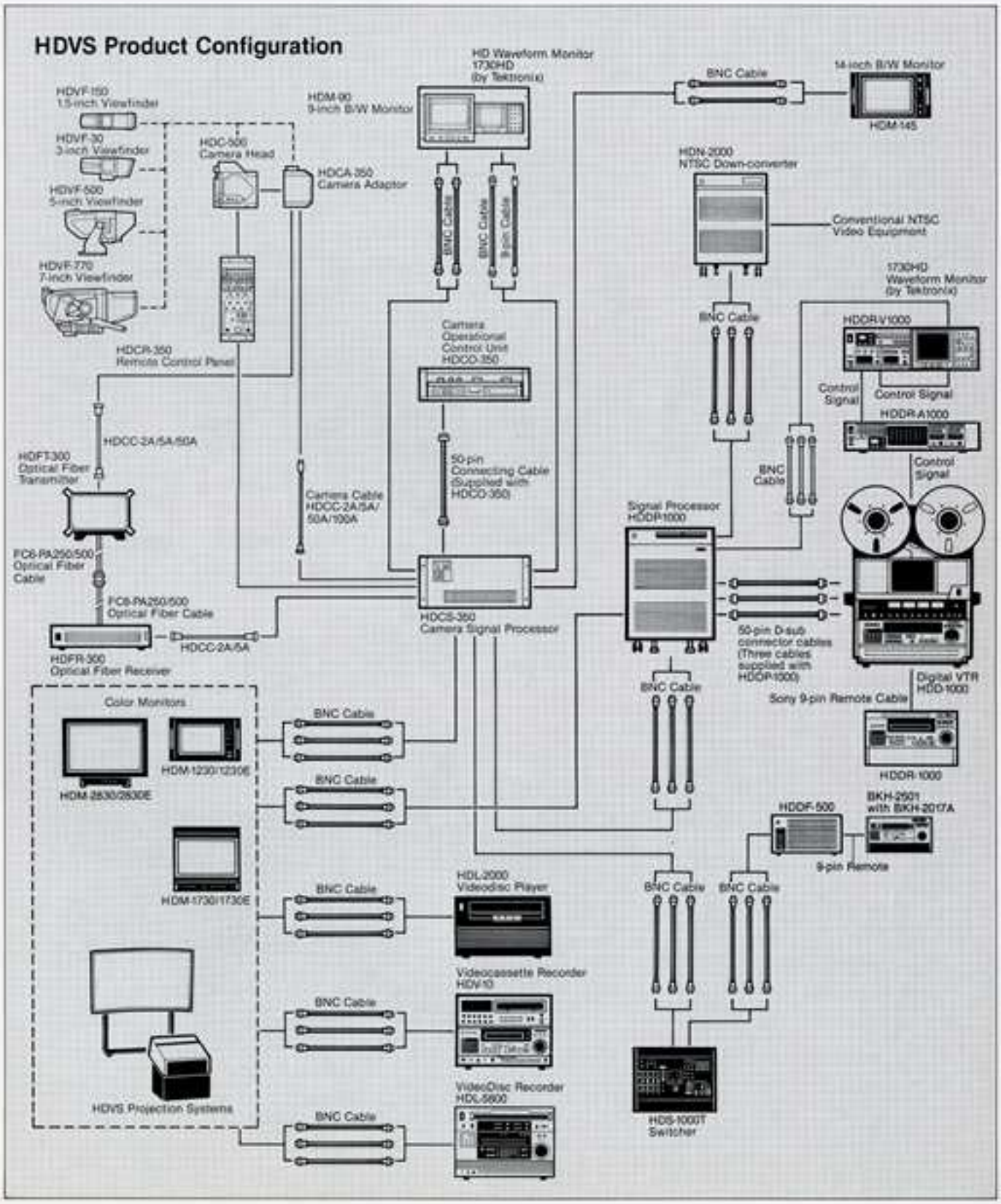
Sony developed a 3-CCD camera, HDC-500, and a high performance digital VTR/Signal Processor, the HDD-1000/HDDP-1000, as well as other products, such as the HDDF-500 Digital Frame Recorder, the HDL-2000 VideoDisc Player and the HDN-2000 NTSC Down-Converter, to the already impressive line-up. Through the experience with these products, the HDV-10 1/2-inch Videocassette Recorder has been developed to further expand the application of HD. For a long distance transmission application, an optical fiber transmission system, consisting of three main components; the HDFR-300 Optical Fiber Receiver, the HDFT-300 Optical Fiber Transmitter and fiber cables. In addition, Sony further extends its HD products line with the HDL-5800 VideoDisc Recorder. The HDL-5800 allows a disc program to be produced with in-house facilities, expanding the HD application possibilities.

A complete HDVS line-up, from acquisition to display, can be offered from Sony. Sony's HDVS extends the possibility of video application, much more with stunning picture quality.



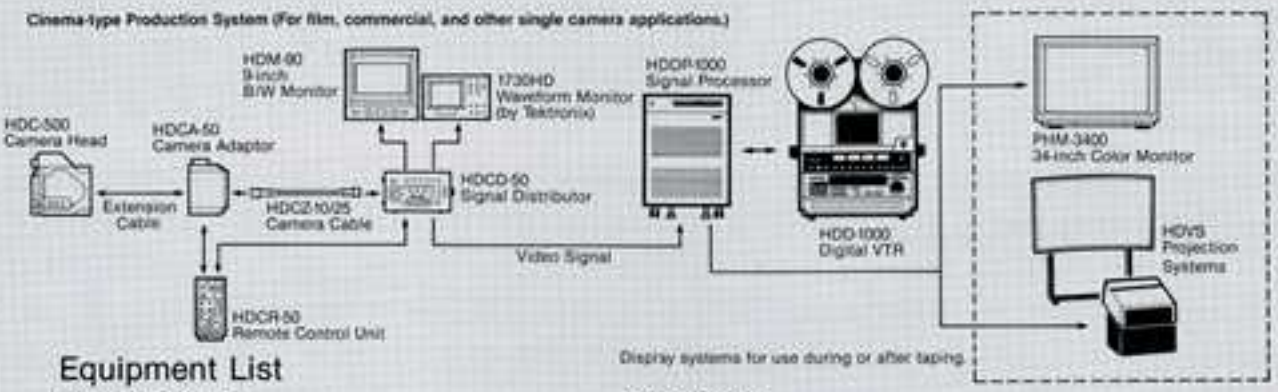
System Configurations

Sony produces the most extensive line of high definition video products in the world, and while many manufacturers are producing various kinds of high definition equipment, only Sony has a complete system capable of everything from program origination to post production and from program transfer to image display. The following diagrams provide a comprehensive look at HDVS connections as well as production and post production systems.



Production System Configurations

Cinema-type Production System (For film, commercial, and other single camera applications.)



Equipment List

CAMERA SYSTEM

HDC-500	Color Camera	1
HDCA-50	Camera Adaptor	1
HDCD-50	Signal Distributor	1
HDCR-50	Remote Control Unit	1
HDVF-30	3-inch Viewfinder	1
HDM-90	9-inch B/W Monitor	1
1730 HD	Waveform Monitor	1

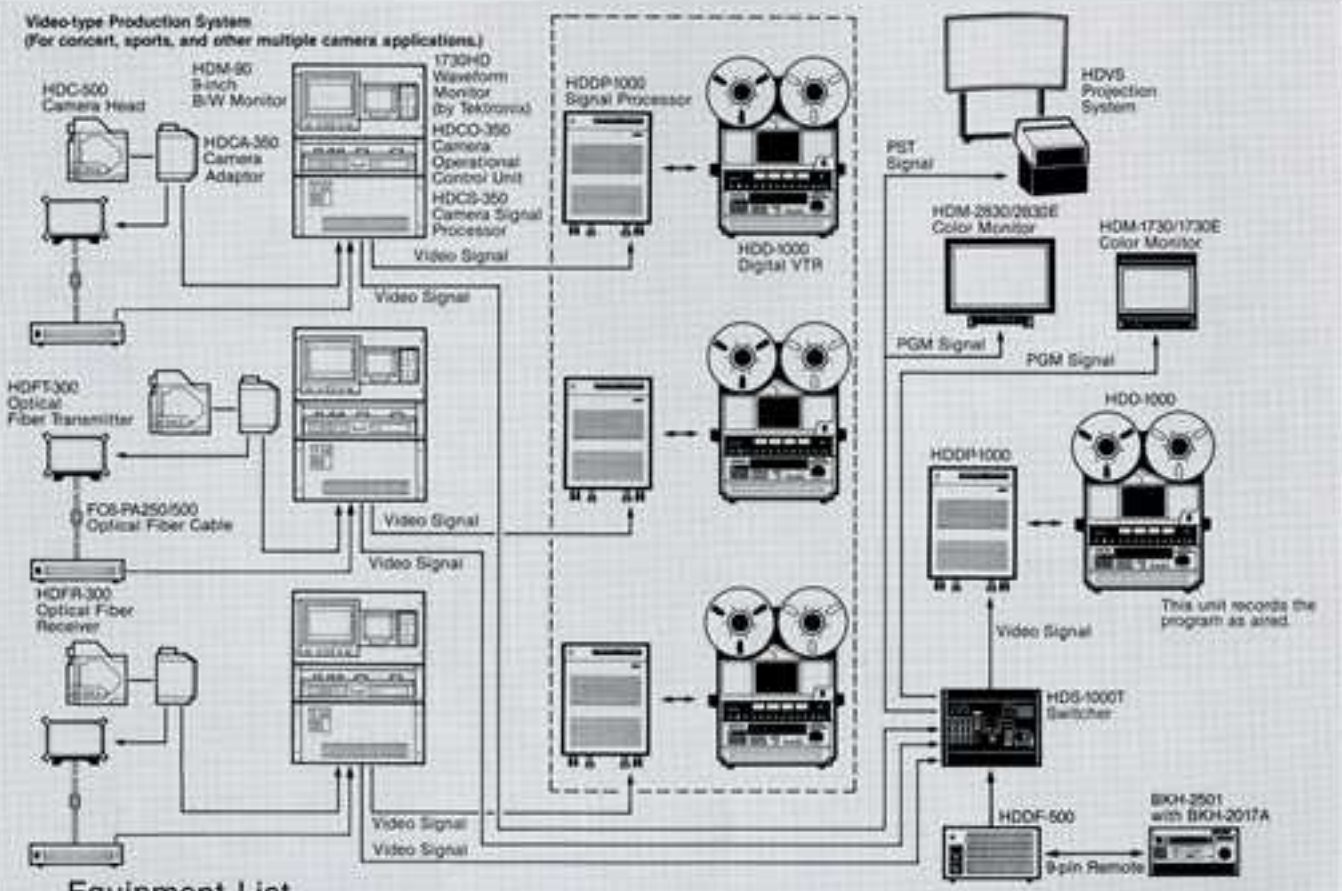
VTR SYSTEM

HDD-1000	Digital VTR	1
HDDP1000	VTR Signal Processor	1

IMAGE DISPLAY SYSTEM

PHM-3400	34-inch Color Monitor	1
HDVS Projection System		1

Video-type Production System
(For concert, sports, and other multiple camera applications.)



Equipment List

CAMERA SYSTEM

HDC-500	Color Camera	3
HDCA-350	Camera Adaptor	3
HDCS-350	Camera Signal Processor	3
HDCO-350	Camera Operation Control Unit	3
HDVF-75	7-inch Viewfinder	3
HDM-90	9-inch B/W Monitor	3
1730HD	Waveform Monitor	3
HDS-1000T	Switcher	1
HDST-1000T	Telop Camera	1
HDFT300	Optical Fiber Transmitter	3
HDFR-300	Optical Fiber Receiver	3
FC6-PA250/500	Optical Fiber Cable	6

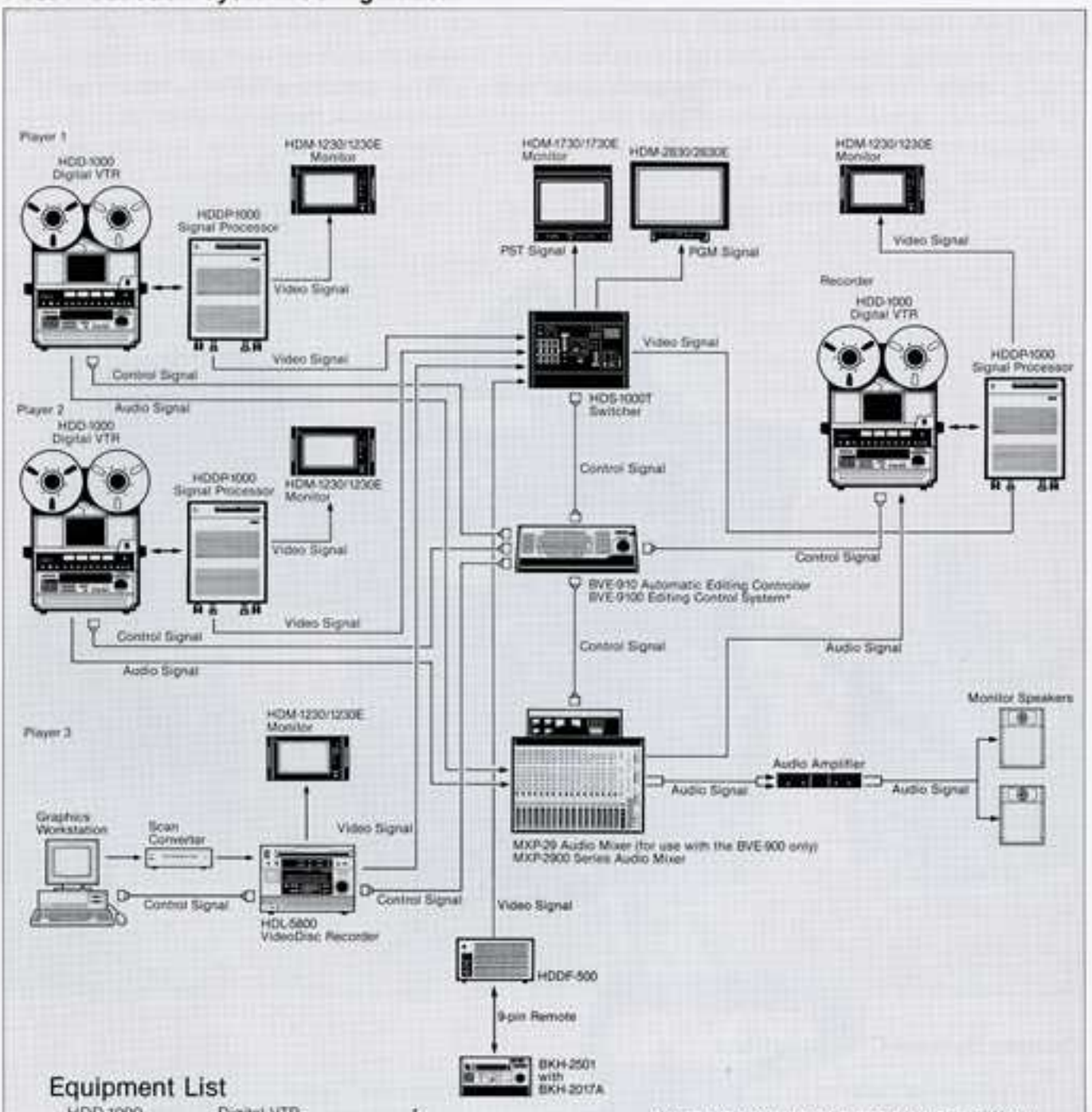
VTR SYSTEM

HDD-1000	Digital VTR	4
HDDP1000	VTR Signal Processor	4
HDDF-500	Digital Frane Recorder	1
BKH-2501 with BKH-2017A	VTR Remote Controller	1

IMAGE DISPLAY SYSTEM

HDM-1730/1730E	Color Monitor	1
HDM-2830/2830E	Color Monitor	1
HDVS Projection System		1

Post Production System Configuration



Equipment List

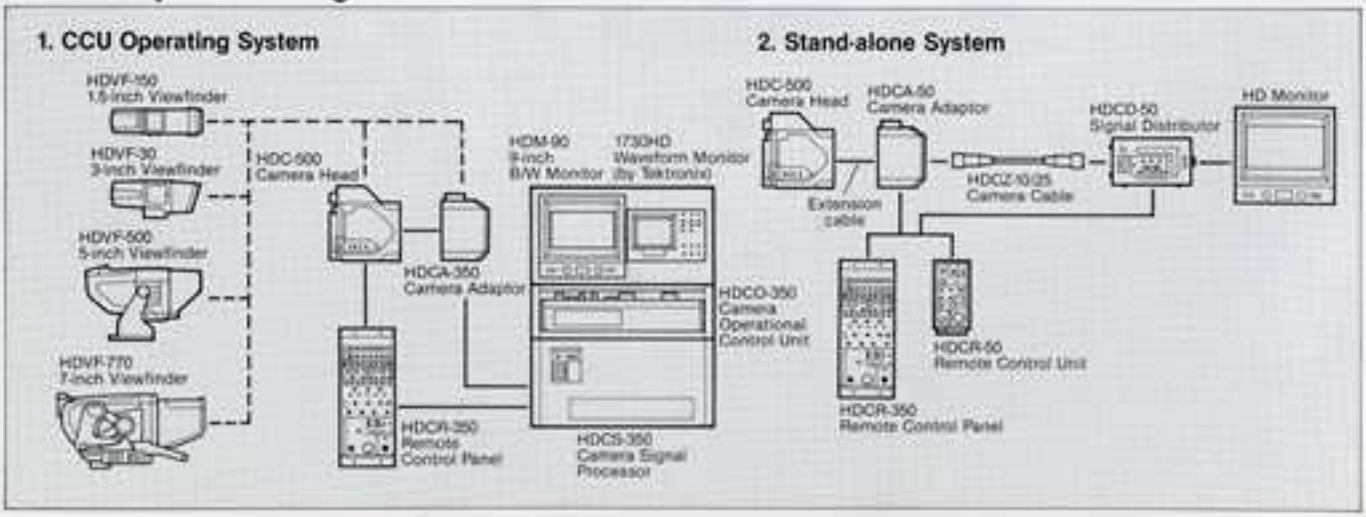
HDD-1000	Digital VTR	4
HDDP-1000	VTR Signal Processor	4
HDDF-500	Digital Frame Recorder	1
HDL-5800	VideoDisc Recorder	1
Graphic WorkStation		1
Scan Converter		1
BVE-910/9100	Editor	1
HDS-1000T	Switcher	1
HDST-1000T	Telop Camera	1
MXP-29/2900	Audio Mixer	1
BKH-2501 with BKH-2017A	VTR Remote Controller	1
HDM-1230/1230E	Monitor	4
HDM-1730/1730E	Monitor	1
HDM-2830/2830E	Monitor	1
Audio Amplifier		1
Monitor Speakers		1 pair

*With the BVE-9100, control of more than four VTRs is possible.

Camera System—HDC-500 Color Camera System

The benefits of Sony's advanced CCD technology and its vast experience in camera development have been reflected in the HDC-500 camera system design. Taking full advantage of FIT (Frame-Interline-Transfer) Hyper HAD sensor, the HDC-500 offers strikingly high sensitivity and stunning picture quality. Furthermore, a wide range of peripherals, such as camera adaptors, camera signal processor/operation unit, and optical fiber transmission system, allows the HDC-500 to be configured into any camera system suitable for electronic cinematography or video type shooting.

Camera System Configurations



Features

- Highest quality 2 million pixel FIT CCD pickup device camera with the Hyper HAD$_{NV}$ sensor
  - — High sensitivity (F8.0 at 2000 lx)
  - — High horizontal luminance resolution of 1000 TV lines
  - — Excellent signal-to-noise ratio of 54dB
  - — Vertical smear level of practical imperceptibility
  - — Minimum lag and high resistance to image burn-in
  - — Impervious to vibration and shock
  - — Minimum effects from electric/magnetic field
  - — Free from registration adjustment
- Super EVS (Enhanced Vertical definition System) for the enhanced vertical resolution
- Electronic shutter
  - — Selectable speed $^1/_{100}$, $^1/_{125}$, $^1/_{250}$, $^1/_{350}$, $^1/_{500}$, $^1/_{1000}$, $^1/_{2000}$
  - — Continuously variable speeds $^1/_{60}$, to $^1/_{350}$
- Lower optical axis of 75.5mm
- Color balance adjustment at 5600K without a filter
- Auto setup function (black/white balance, gamma, etc)
- System versatility with the peripheral equipment
- Remote operation up to 25m away from a camera adaptor

HDC-500

HDC-500 with HDCA-350

HDCA-350

System Versatility

CCU OPERATING SYSTEM

Providing the maximum performance of the CCD camera and high operability, this CCU operation system ensures high quality picture shooting.

HDCA-350 Camera Adaptor

- Up to 25 remote operation of HDC-500

HDCO-350 Camera Operation Control Unit

- Provides full automatic camera setup functions and full manual controls
- Four setup files and four scene files
- Electronic shutter on/off switch with shutter speed selection
- Super EVS on/off switch with mixing ratio selection

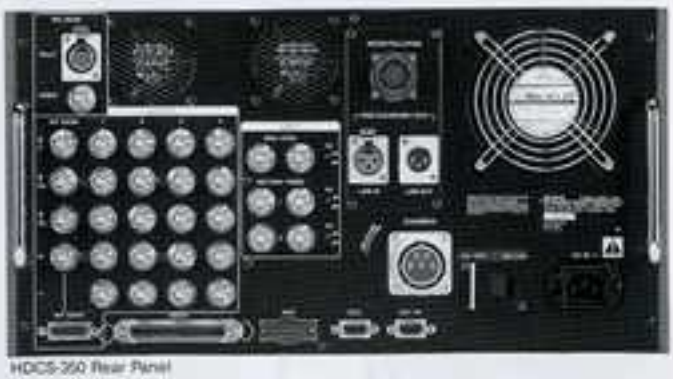
HDCS-350 Camera Signal Processor

- Up to 300m (985ft) cable compensation circuit
- All-digital image enhancer for clear and natural pictures
- Incorporates selectable five linear matrixes
- Black gamma correction

HDCR-350 Remote Control Panel

- Connected to either HDCS-350 Camera Signal Processor, HDCA-50 Camera Adaptor or HDCD-50 Signal Distributor
- Provides a choice of Joystick or Dial type for iris/master-black control
- EIA 19-inch rack mountable with another 2 units of HDCR-350.

HDCO-350/HDCS-350



HDCS-350 Rear Panel

HDCR-350

HDCO-350 Control Panel

STAND-ALONE SYSTEM

This stand-alone system is a highly mobile camera system, especially suitable for HD field production.

HDCA-50 Camera Adaptor

- Provides basic camera control functions, including SMPTE 240M signal processing, digital image enhancement, auto white/black balance, Auto setup and four scene files
- Up to 25m remote operation of HDC-500
- Full Genlock capability
- AC/DC operation

HDCD-50 Signal Distributor

- Provides two channesl of G(Y)/B(PB)/R(PR) outputs in addition to VTR and MONITOR outputs
- Accepts a return video and an external sync signal
- AC/DC operation
- Half a 19-inch EIA rack size wide

HDCR-50 Remote Control Unit

- Connected to either the HDCA-50 or HDCD-50
- Contained in a rugged die-cast casing

HDCD-50

HDCD-50 Rear Panel

HDCR-50

HDCA-50

HDCA-50

Optical Fiber Transmission System
HDFT-300, HDFR-300, FC6-PA250/500, FC6E-PA10

To meet the needs of long distance transmission applications such as the relay of various sports and event hall programs, Sony offers the optical fiber transmission system. In this system, full bandwidth of analog video and digital audio transmission are possible. By use of this system, transmission distance can be extended up to 1km using with the cable extension connectors.
The optical fiber transmission system will expand the possibility of high definition video applications, much more.

HDFT-300 Optical Fiber Transmitter

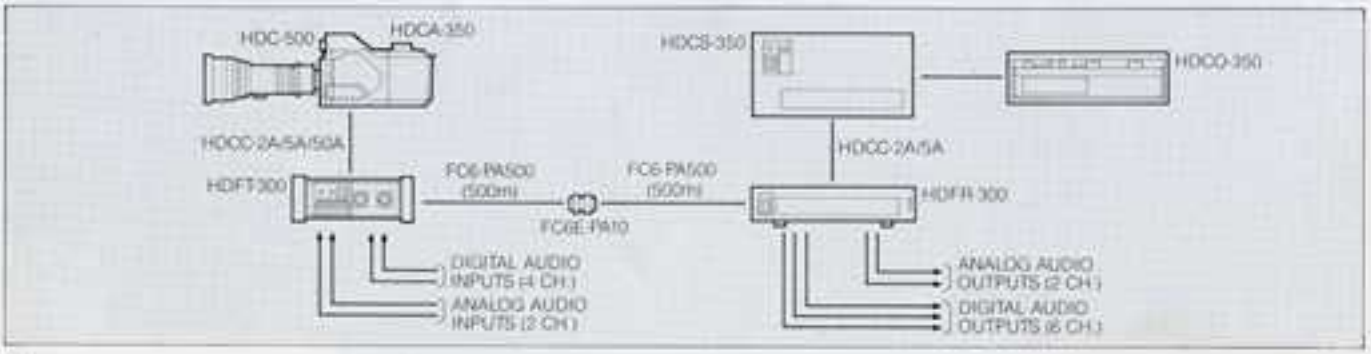
FC6-PA250/500 Optical Fiber Cable

HDFR-300 Optical Fiber Receiver

FC6E-PA10 Cable Extension Connector

Features

- Mutual transmission system via optical fiber cables between the HDCA-350 and the HDCS-350. (video × 1, return video × 1, talk back × 2, data × 1).
- Analog transmission of full bandwidth (G, B, R) component video.
- Digital Transmission of total six channels of audio.
  HDFT-300 (Transmitter)
  —Four channels of digital audio inputs conforming to the AES/EBU format.
  —Two channels of analog audio inputs
  HDFR-300 (Receiver)
  —Six channels of digital audio outputs in which two channels can be selected for output of analog audio parallel to digital outputs.
- Transmission distance can be extended up to 1km using with cable extension connectors.
- Power supply for the HDC-500, HDCA-350 and the HDFT-300 is provided by the HDFR-300.
- The HDFT-300 provides audio synchronization to video capability.
- Reel with casters is supplied for easy wiring operation.



HDVF-150
1.5-inch Viewfinder

HDVF-30
3-inch Viewfinder

HDVF-500
5-inch Viewfinder

HDVF-770
7-inch Viewfinder

HDM-90
9-inch Monochrome Monitor

HDM-145
14-inch Monochrome Monitor

HKCF-750
Pan Tilt Table

HKCH-500
Shoulder Pad

HDCC-2A/5A/50A/100A
(2m/5m/50m/100m)
Multicore Cable

HKCF-90
Rack Mount Plate Kit

Zoom Lenses

Model No.	Focal length (mm)	Zoom ratio	F. No.	M.O.D. (mm)	Weight (kg)	Manufacturer	Remarks
R5.5 X 12.5AD-HD	12.5 - 70	5.5X	F1.5	1.2	8	Nikon	Barrel type
R10 X 12AED-HD	12 - 240*	10X	F1.8	1.3	7.5	Nikon	Barrel type
HR6 X 12.5SD-6B	12.5 - 75	6X	F1.5	1.2	6.3	Fujinon	Barrel type
HR6 X 12ERD-R28	12 - 144*	6X	F2.2	0.9	3	Fujinon	Portable type
HR11 X 11SD-6B	11 - 121	11X	F1.8	1.2	7.5	Fujinon	Barrel type
HR12 X 10SD-6B	15 - 180	12X	F1.8	1.6	5.5	Fujinon	Barrel type
HR14 X 12.5ES-6B	12.5 - 350*	14X	F1.6	1.4	20.5	Fujinon	Box type
HR22 X 18ES-6B	18 - 800*	22X	F1.8	5.5	26	Fujinon	Box type
HR22 X 18ES-6BD	18 - 800*	22X	F2.8	5.5	7	Fujinon	Barrel type
HR40 X 15ES-6	15 - 1200*	40X	F2.2	5.7	21	Fujinon	Box type
HV5 X 8.5B	8.5 - 42.5	5X	F2.2	1.2	6.3	Canon	Barrel type
HV14 X 12.5B	12.5 - 350*	14X	F1.6	1.3	26	Canon	Box type
UV40 X 15B	15 - 1200*	40X	F2.3	4	19	Canon	Box type

*With a X2 extender

Fixed Focal Lenses

Model No.	Focal length (mm)	F. No.	M.O.D. (m)	Weight (kg)	Manufacturer
RF15AD-HD	15	F1.2	0.385	3.9	Nikon
RF30AD-HD	30	F1.2	0.45	3.4	Nikon
RF50AD-HD	50	F1.2	0.55	3.5	Nikon
HRF9.5SD-6B	9.5	F1.2	0.75	3.6	Fujinon
HRF13SD-6B	13	F1.2	0.75	3.1	Fujinon
HRF18SD-6B	18	F1.2	0.65	2.7	Fujinon
HRF30SD-6B	30	F1.2	0.7	2.7	Fujinon
HRF50SD-6B	50	F1.2	0.9	2.9	Fujinon
FV17	17	F1.2	0.5	2.6	Canon
FV26	26	F1.2	0.5	2.5	Canon
FV80	80	F1.2	0.85	2.8	Canon

Digital VTR System

HDD-1000 Digital VTR

The transport, control panel, system control and servos of the HDD-1000 Digital VTR are based on Sony's well-accepted and user-friendly BVH-3000. Incorporating the latest technology, including eight channels of digital audio, the HDD-1000 offers the multi-generation capability and transparent recording expected from digital equipment with the reliability and durability expected from Sony.

Features

- Incorporates many of the features of the BVH-3000 including compact size, lightweight, ease of tape threading, computerized servo control, and front panel operation.
- With wide band Y, P_B, P_R recording, a high quality picture is assured.
- Wide band (30MHz) recording system.
- Front panel controls for basic simple editing.
- One hour recording time with 11.75-inch reel.
- Time code editing possible when interfaced with the BVE-910 Editing Control Unit or the BVE-9100 Editing Control System.
- Built-in time code generator/reader.
- 9-pin Remote interface.
- Special playback modes
  — JOG: still to ±1/4 times normal
  — SHUTTLE: still to ±8 times normal
- Eight channels of digital audio.

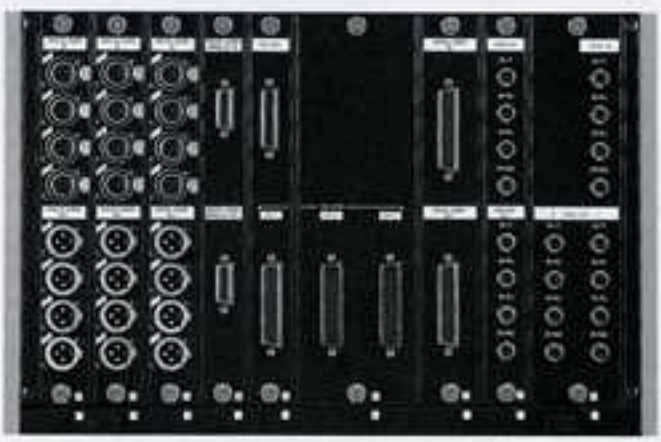
HDD-1000 Rear Panel

HDDP-1000 VTR Signal Processor

With a configuration based on Sony's DVPC-1000 Digital VTR Signal Processor, the HDDP-1000 VTR Signal Processor is highly reliable and easy to service.

Features

- Compact
- Easy to service
- 8-bit digital processing system.
- Signal to noise ratio of 56dB



HDDR-1000 VTR Control Unit
HDDR-A1000/V1000 Audio/Video Remote Control Unit

For the enhanced operability of HDD-1000 and HDDP-1000 Digital VTR System, the HDDR-A1000 Audio Remote Control Unit, the HDDR-V1000 Video Remote Control Unit and the HDDR-1000 VTR Control Unit are available.

HDDR-1000 VTR Control Unit

Features

- Similar control functions available on the HDD-1000 function control panel.
- Accepts both the HD sync signal and conventional sync signals as reference.
- Controls other VTRs having a Sony 9-pin remote interface.

HDDR-A1000 Audio Remote Control Unit

Features

- Adjustments for recording/playback level in analog mode.
- Adjustments for playback level in digital mode.

HDDR-V1000 Video Remote Control Unit

Features

- Adjustments for input level of G/Y, B/P_B, R/P_R for analog mode.
- Adjustments for output level of Y, P_B, P_R for analog mode.
- Video Phase and Sync Phase adjustment.

HDV-10 Videocassette Recorder

An analog component video cassette recorder, the HDV-10 is based on the UNIHI format.*
It provides a 63 minute recording time, with a video bandwidth of 20MHz for the Y signal and 7MHz for P_B and P_R signals. Employing Sony's innovative electronic and mechanical technology, the HDV-10 has been designed as a lightweight, compact and one-piece VTR. The HDV-10 includes four indepedently editable digital audio channels, and provides user oriented, easy operation with use of 21 numeric keypads and menu display on the front panel. With its advanced video processing and the convenience of its cassette format, the HDV-10 will extend the applications of HD video.

*UNIHI is a ½-inch videocassette format developed for the applications of HD video.

Features

- **Wide Bandwidth Analog Frequency Modulation Recording**
  Based upon the UNIHI format, the HDV-10 achieves the wide bandwidth of Y: 20MHz/P_B: 7MHz/P_R: 7MHz.
- **Four Digital Audio Channels**
  Includes four independently editable digital audio channels. The digital recording technology gives a frequency response of 20Hz to 20kHz, with a dynamic range of more than 90dB. An analog audio cue track is also provided for effective audio editing.
- **UNIHI Videocassette Tape HCT-63**
  Metal particle video tape, ½-inch (12.65mm) wide and 13.5μm thick, based on the UNIHI format. This cassette provides a maximum of 63 minutes of recording/playback time.
- **Compact and Lightweight**
  Features the compact size and lightweight; 7 units (310mm) height, 50 kg (110 lb 4 oz) in weight with one-piece consutruction.
- **Sequential Recording/Playback Capability**
  When two units of HDV-10 are interconnected via 9-pin remote interface, sequential recording and playback is possible.

- **Automatic Operation**
  The HDV-10 features convenient functions such as Power on Play, Auto Repeat and Auto Rewind.
- **Picture Freezing**
  Adopted frame memory enables the HDV-10 to provide freeze pictures.
- **Simple Operation**
  Using the optional remote control unit RM-770, basic functions such as STOP, REC, PAUSE, F-FWD, F-REW, PLAY and SEARCH-FWD/SEARCH-REW, can be controlled via the SIRCS interface.
- **Built-in Editing Facility**
  Capable of two machine editing with a simple connection via the 9-pin remote port.
- **Digital Audio I/O**
  Equipped with digital audio interfaces which conform to the AES/EBU format. Therefore the HDV-10 can be directly interfaced with the HDD-1000/HDDP-1000 HD digital VTR.
- **Analog Video and Audio I/O**
  Analog component video, both G, B, R and Y, P_B, P_R, together with analog audio can be interfaced directly to the HDV-10.
- **RS-232C/9-pin remote interface**
  Equipped with three 9-pin remote serial ports and one RS-232C serial port to interface with various external equipment.

HDL-5800 VideoDisc Recorder

The HDL-5800 is designed to record both high definition still images and continuous video onto an optical disc with a video bandwidth of 20MHz for the Y signal and 6MHz for P_B and P_R signals. Taking full advantage of optical disc technology, the HDL-5800 has many of convenient features, such as single frame recording, fast random access, and slow/still playback. With the HDL-5800, a disc program can be internally produced, providing substantial savings in cost and time.

Features

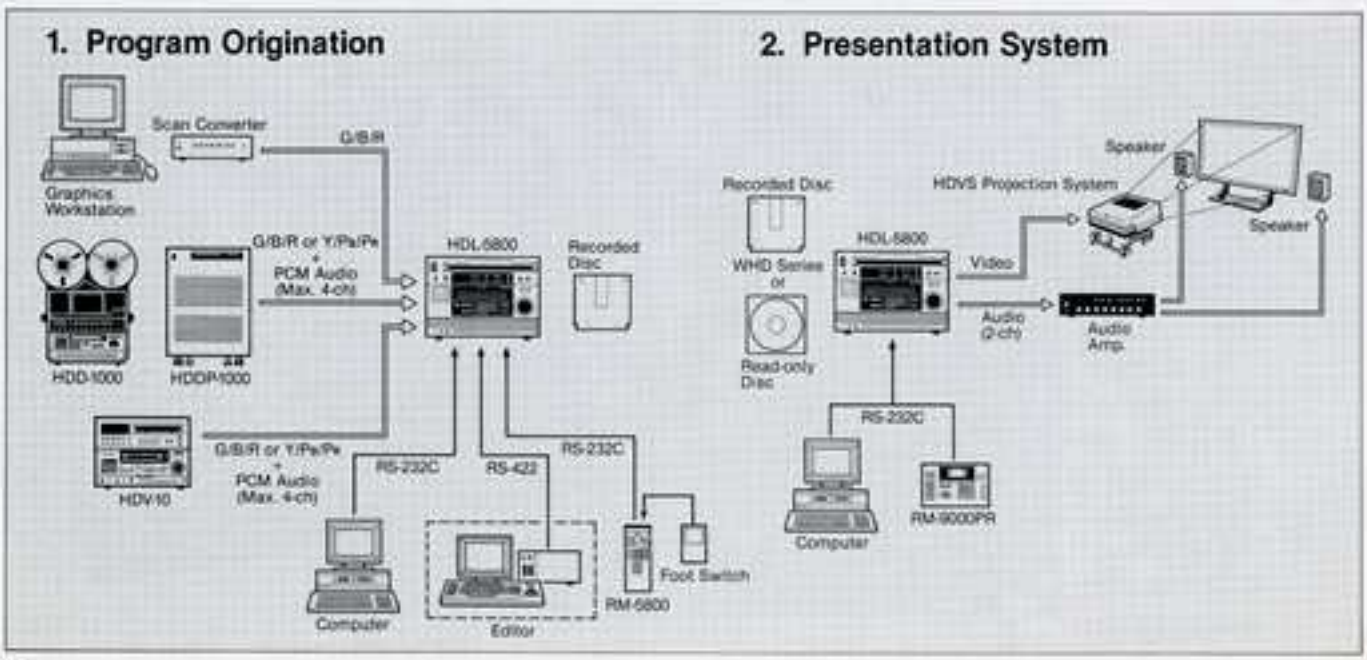
- Superior Picture Performance
  - — Capable of recording HD still images and video onto either the WHD-3AL0 or the WHD-3AA0 optical disc:
    WHD-3AL0 for CLV mode: Up to 10 minute video or 18,000 still frames per side
    WHD-3AA0 for CAV mode: Up to 3 minute video or 5400 still frames per side
  - — Wide bandwidth: Y: 20MHz, P_B/P_R: 6MHz
  - — The alloy formation technique assures long-term storage of quality images
  - — High resolution black and white mode with the extended Y signal bandwidth of 26MHz
  - — PCM recording with 2/4 selectable digital audio channel

- Operating Convenience
  - — Frame picture recording/playback capability
  - — Fast random access within 0.6 seconds in the CAV mode
  - — Frame memory
  - — Compatibility with read-only videodisc for the HDL-2000*
  - — Jog/Shuttle dial operation for picture playback at variable speed
  - — Auto repeat playback mode

*A supplied disc tray should be attached to a read-only disc.

- Interface Facilities
  - — Equipped with RS-232C/RS-422 remote interfaces
  - — Digital Audio input facilities

RM-5800



HDDF-500 Digital Frame Recorder

By incorporating high capacity Dynamic RAM chips, the HDDF-500 can store 8 up to 32 frames (or 16 to 64 fields) and transfer these frames and fields maintaining highest picture quality.
The HDDF-500 can be controlled remotely using a VTR controller or editing control unit.
Furthermore, basic control is possible via pre-set internal switches of the HDDF-500.
With the adoption of computer parallel interface and 9-pin remote interface, the HDDF-500 allows both real time and non-real time operations.
Accordingly, this feature can be used effectively in image processing, such as in animation, computer graphics creation and image transfer.

Features

- 3 channel (G,B,R) equal bandwidth system (30MHz)
- Can store 8 up to 32 HDVS frames (or 16 to 64 fields) by combining any of the optional 8 frame memory and 4 frame memory boards. (a minimum of two same boards is required)
- Emulates HD Digital VTR (Real time operation)
  - — Can be controlled by VTR remote controllers provided for BVH-2000 or 3000 series, a front panel of HD Digital VTR or editing control units through the 9-pin remote interface.
  - — Basic control is possible via pre-set internal switches of the HDDF-500.
- Equipped with computer parallel interface and SCSI interface (Non-real time operation)
  - — Allows special effects or computer graphics storage into the HDVS format.
  - — Transfers to and from the external equipment such as DEC Micro VAX*, Micro PDP* or VAX*.
- Single and multi-frame recording is possible just like the BVH-2500 or 3000 series 1-inch VTR when using the BKH-2501 with BKH-2017A or BKH-3090 Sony VTR remote controller.
- Looping Playback/Endless recording is possible.
- Electronics to Electronics (E to E) capability
- Meets the needs of a variety of video signal I/O with selectable analog or digital input and simultaneous analog and digital outputs
- Allows stunt motion playback when tied to auxiliary controller.
- 74.25 MHz sampling frequency, 8 bit quantization digital processing system

** These are registered trademarks of Digital Equipment Corporation*

HDL-2000 Videodisc Player

Designed to facilitate the use of HDVS in a variety of applications, the HDL-2000 Videodisc Player combines full band high definition video with digital stereo audio in an easy to operate, yet sophisticated unit.

Features

- Full band high definition video (Y=20MHz).
- Two channel PCM audio.
- 15 minutes of playback with a CLV disc. (CAV disc=8 minutes)
- Automatic selection of CLV/CAV.
- Special playback modes available in CAV mode. (SCAN/SLOW/STILL)
- Wired/wireless remote control available.
- RS-232C interface provided.
- Automatic repeat.

*The AUDIO OUT connector shown in the above photograph is a Japanese type. In the world except Japan, the male type of connectors is provided.

HDN-2000 NTSC Down-converter

The HDN-2000 NTSC Down-converter allows the direct down-conversion of software produced by high definition equipment into a conventional video format (NTSC).

Features

- Four down-conversion modes.
  - — Edge Crop
  - — Letter Box
  - — Squeeze
  - — Magnify
- Field freeze mode.
- 60.00 or 59.94Hz.
- Field synchronizer.
- Image enhancer.
- NTSC color bar generator.

Post Production Equipment

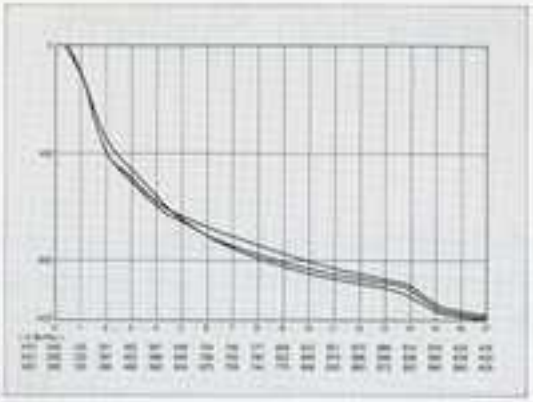
To make HDVS even more complete, Sony has developed the products necessary for post production. The Digital EBR (Electron Beam Recording) system and production switcher form the complete line of post production high definition equipment available from one manufacturer.

Switcher
HDS-1000T

Features
- Thirty-one standard/rotary wipes.
- Effects (Wipe/Key Wipe/Mix/Key Mix).
- Variable soft and border wipes.
- Chroma keyer/Downstream keyer.
- 7 input and 4 output buses.
- Serial and parallel interfaces.
- Color bar/Two title color generator.
- Take/Auto take (variable transition time).
- Pattern modulator/Positioner.
- Genlock inputs.

Digital Electron Beam Recording (EBR) System

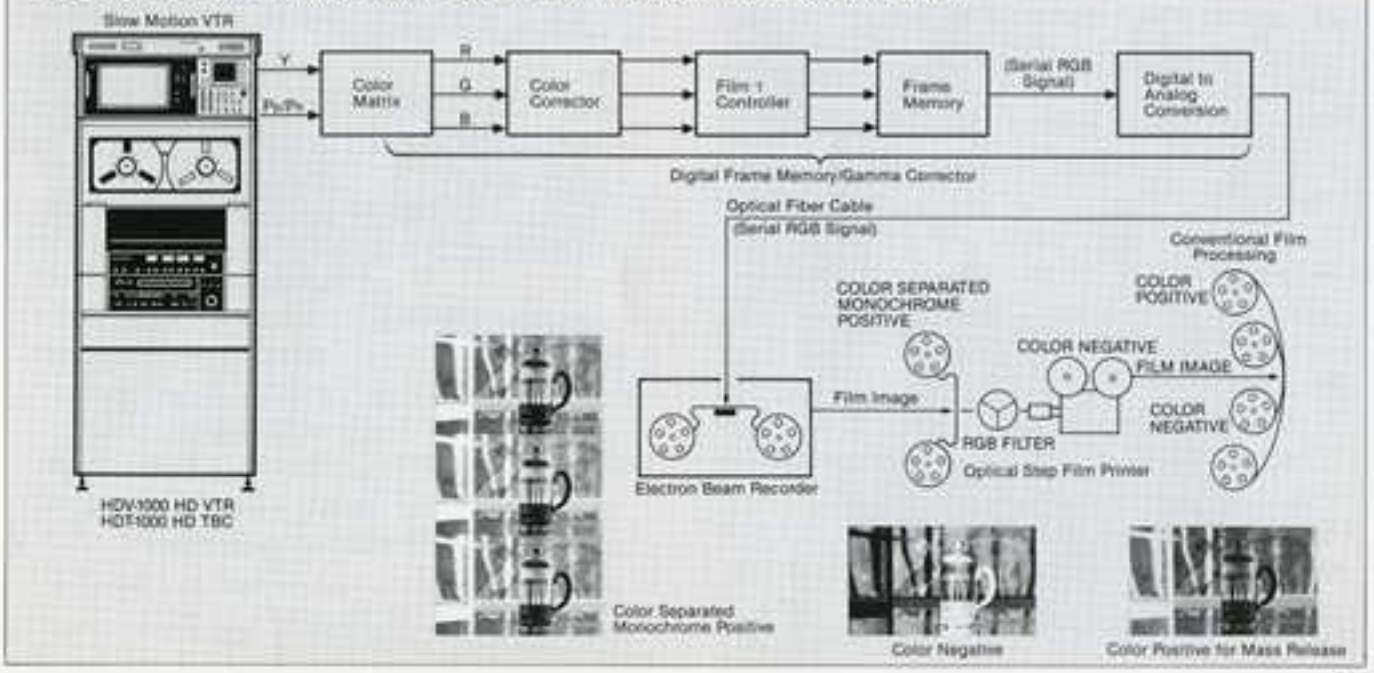
Developed to meet the demand for tape to film transfer, the EBR system provides producers with an alternative to producing with film.



Typical gamma correction computer graphics

Slow Motion VTR, Frame Memory/Gamma Correction Unit, and EBR Unit

EBR SYSTEM - HDVS TAPE TO FILM TRANSFER FLOWCHART



Projection System

A quality projector is essential for any HDVS (High Definition Video System). Sony can offer a full line-up of HD projectors with a large scale display size of 55-inch, 100 to 350-inch: can be used for a wide variety of applications.

High Definition Projector—HDIH Series—
HDIH-1200/1200M, HDIH-2000/2000M, HDIH-3000/3000M

The HDIH series high definition projectors: the HDIH-1200/1200M, HDIH-2000/2000M and HDIH-3000/3000M cover a wide scale of screen size ranging from 100 to 350-inch with high quality picture.

Features

- Automatically selected aspect ratio
  16:9 (H:V) for HDTV
  4:3 (H:V) for four color standards
  (NTSC, PAL, SECAM, NTSC4.43)
- Large scale of screen display.
  HDIH-1200/1200M: Display in size from 100-inch to 150-inch diagonally
  HDIH-2000/2000M: Display in size from 150-inch to 220-inch diagonally
  HDIH-3000/3000M: Display in size from 220-inch to 350-inch diagonally
- High brightness
  The light output of 300lm at peak white is realized thanks to the adoption of high performance 9-inch CRT and HACC lens. The HACC lens also provides accurate color reproduction.
- LC² system.
  Liquid Coupling and Cooling (LC²) system is adopted to realize high contrast ratio.
- Wireless or wired remote control is possible for both registration and lens focus adjustments.
- The registration is digitally adjusted, and instructions and status indications are displayed on the screen.
- 9 types of test signal generators are built-in for easy adjustments of registration, white balance and lens focus.
- Ceiling and table top setup both possible.
- Rear projection
  Employing with the optional HDIS-1200RK Rear screen kit, the HDIH-1200/1200M can be used as the rear projection system.
- Twin stacking capability
  Using the optional HDIT-3000W Projection Head Stand, twin stacking application of HDIH-3000/3000M is possible. This system provides bright image projection (peak white: 600 lm, all white: 260 lm).

System Composition

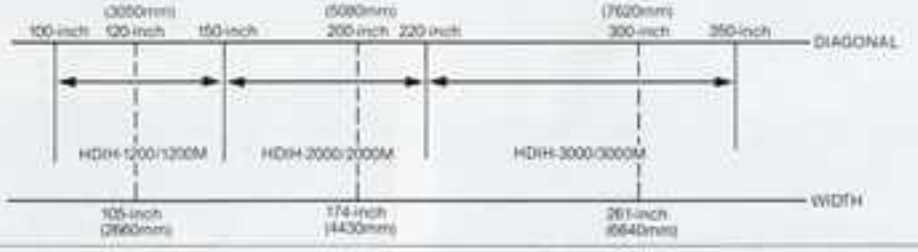
The HDIH series projection system is composed of the following components.

- HDIH-1200/1200M*1 Sony HD Projection Head
- HDIH-2000/2000M*1 Sony HD Projection Head
- HDIH-3000/3000M*1 Sony HD Projection Head
- HDIS-1200C1 Sony HD Screen
  (Semi-Curved 120-inch diagonal, 16:9 aspect ratio)
- HDIB-1200C Sony HD Screen Stand
  (for the HDIS-1200C1)
- HDIS-1200RK*2 Sony HD Rear Screen Kit
- HDIT-1200 Sony HD Projection Head Stand (for the HDIH-1200/2000/3000 series)
- HDIT-3000W Sony HD Projection Head Stand (for twin stacking of HDIH-3000/3000M)

*1 A remote commander RM-1200 is supplied with each of the HDIH series projection head.
*2 This kit consists of mirror with stand, projection head twin-stack stand, rear screen (120-inch diagonal) with screen stand.

Screen Size Range

The HDIH-1200/1200M, HDIH-2000/2000M and HDIH-3000/3000M adapt to a range of display size, from 100 to 350-inch diagonal as the following chart shows:



Rear Projection (HDIS-1200RK)

Using the optional HDIS-1200RK Rear Screen Kit, the HDIH-1200/1200M can construct a rear projection system, which provides a wide viewing angle (±60° horizontally, ±26° vertically). This system can be more effectively used even in the difficult lighting conditions compared with the front projection system.

High Definition Rear Projector—HDIR-550/550M—

The HDIR-550/550M HD Rear Projector can be used even in the unfavorable lighting conditions with the adoption of innovative super fine pitch screen with black coated stripes. One-piece unit with a screen size of 50-inch allows high mobility along with the compact and lightweight mechanical construction.

Features

- One-piece unit
  A projection head, a rear screen and other mechanical devices are put together in one-piece unit for high mobility.
- Four casters allow easy transportation.
- High quality picture
  With the adoption of new 7-inch CRT, high resolution/non-spherical lens and super fine pitch screen, the HDIR-550/550M can provide high quality and precise images.
- High contrast ratio is realized due to the development of the optical coupling and liquid cooling system together with the adoption of anti reflective multi-coating lens.
- Black stripes are coated on the screen surface for adsorption of the ambient light.
- Automatically selected aspect ratio
  16:9 (H:V) for HDTV
  4:3 (H:V) for four color standards
  (NTSC, PAL, SECAM, $NTSC_{4.43}$)
- The registration and white balance can be adjusted via the remote commander supplied with the HDIR-550/550M.

Color Monitors

Sony HD color monitors are available to suit almost any application from production and post production applications to commercial display. They are utilized not only for displaying the image recorded by HDVS, but also for evaluating the picture quality, with a variety of display size ranging from 12 to 28-inch diagonally.

HDM-1230/1230E

HDM-2830/2830E

HDM-1730/1730E

Features (HDM-1230/1230E/1730/1730E)

- 16:9 aspect ratio.
- SMPTE C standard phosphor.
- 525 lines non-interlaced signal (IDTV decoder output) input is possible. (only for HDM-1730/1730E)
- Adjustable color temperature.
- The beam detecting circuit system allows black level and color temperature to be stabilized.
- Tri-level sync system
- G, B, R/Y, P_B, P_R inputs both are available.
- H Delay, V Delay and Underscan facilities are provided for monitoring or evaluating of camera/ VTR signals.
- The pulse adding current is used for precise brightness and contrast controls.
- 9 independent sections (HDM-1230/1230E), 15 independent sections (HDM-1730/1730E) of the screen for convergence adjustment.
- 7 types of test signals are incorporated.
- Aperture adjustment in RGB mode.
- EIA standard 19-inch rack mountable

Features (HDM-2830/2830E)

- 16:9 aspect ratio.
- Flat and square screen is adopted.
- The anti-reflection coating provides high contrast.
- SMPTE C standard phosphor.
- 525 lines non-interlaced signal (IDTV decoder output) input is possible.
- Adjustable color temperature.
- The beam detecting circuit system allows black level and color temperature to be stabilized.
- Tri-level sync system.
- G, B, R/Y, P_B, P_R inputs both are available.
- H Delay, V Delay and Underscan facilities are provided for monitoring or evaluating of camera/ VTR signals.
- The pulse adding current is used for precise brightness and contrast controls.
- Digital convergence system is incorporated (169 points adjustable for the entire screen).
- 7 types of test signals are incorporated.
- Aperture adjustment in RGB mode.

Optional Accessories and Peripheral Equipment

HDVS ACCESSORIES

HDSC-1000 Sync Converter

Designed to allow complete flexibility for sync signal conversion, the HDSC-1000 can be used to convert any of the three high definition video sync signals into the sync signal required.

Features

- Supports all three high definition video sync signals.
- Automatic sync signal input and field frequency detection.
- Genlock capability.
- Sync phase adjustment.
- 525 sync output for off-line editing.
- Two sync converters per unit.

HKDF-504 HD Frame Memory Board (4 Frame Memory)
HKDF-508 HD Frame Memory Board (8 Frame Memory)

These boards are designed for storing HDVS frames or fields, which are inserted into the HDDF-500 HD Digital Frame Recorder.

HDCC-2A/5A/50A/100A Multicore Camera Cable

With this kind of cable, connections of up to 200 meters are possible.

HDVF-150 1.5-inch Viewfinder

A compact viewfinder that will not block the operator's view.

HDVF-30 3-inch Viewfinder

This viewfinder provides a high resolution of 450 TV lines.

HDVF-500 5-inch Viewfinder

HDVF-770 7-inch Viewfinder

A seven inch monochrome viewfinder designed to enhance operational ease.

HDM-90 9-inch Monochrome Monitor
This monitor is used with camera system and can be mounted in a rack with the HDCS-300/HDCO-300 and the 1730HD.

HDM-145 14-inch Monochrome Monitor
This monitor provides a high resolution of 1000 TV lines.

VF-503 Monitor Hood
Created expressly for use with the HDM-2820/2820E HD Color Monitor, this hood enhances viewing.

HD-1D Series High Quality Video Tape
This tape was especially designed for the digital VTR of HDVS. It is available in 33, 48 and 63 minute recording time.

HCT-63 Sony UNIHI Videocassette
This cassette was especially designed for analog videocassette recorder of HDVS, based on the UNIHI format. It is available for 63 minute recording time.

WHD Series Writable Laser VideoDisc Media
This series of videodisc media was designed for a videodisc recorder of HDVS. It is available in the CAV and CLV recording mode.

FC6-PA250/500 Optical Fiber Cable
With use of cable extension connector, connections of up to 1 km are possibel.

FC6E-PA10 Cable Extension Connector
This connector is used for connection of optical fiber cables.

PERIPHERAL EQUIPMENT

BVE-910 Editing Control Unit

This editing controller is capable of controlling up to four VTRs, as well as a video switcher and an audio mixer, for A/B roll editing.

Monitor is optional

BVE-9100 Editing Control System

This system is capable of controlling a large number of VTRs, as well as a video switcher and an audio mixer, for sophisticated post production editing.

BKH-2501 with BKH-2017A

BKH-2501 with BKH-2017A

Remote control panel with a adaptor box

This remote controller is capable of controlling the HDDF-500 Digital Frame Recorder.

MXP-2900 Audio Mixing Console

This sophisticated unit is available in a variety of configurations which will complete a high quality A/B roll editing system.

Specifications

CAMERA SYSTEM

GENERAL SPECIFICATIONS OF CAMERA SYSTEM

Signal standard	SMPTE 240M, BTA-S001
Sensitivity	F8.0 at 2000 lx, 3200K, reflection 89.9% white
Minimum illumination	Approx. 6 lx (F1.2 lens, +18dB gain)
S/N	54 dB (Y: 30MHz)
Horizontal resolution	1000TVL/ph
Horizontal frequency	33.75kHz 1125 lines/frame
Vertical frequency	60Hz 2:1 interlace
Warm up time	2 s
Storage temperature	−20°C to 60°C (−4°F to 140°F)
Operating temperature	0°C to 40°C (32°F to 104°F)

CAMERA HEAD (HDC-500)

Pickup device system	3-chip 1-inch Frame Interline Transfer CCD
Picture elements	1920(H) × 1036(V)
Optical system	F1.2 high index quartz fiber
Built-in filters	Color filters : CROSS : 3200K : 4300K : 6300K ND filters : CLEAR : 1/4 : 1/8 : 1/16
Registration	within 0.025% (All zones, without lens)
Geometric distortion	Below measurable level (without lens)
Lag	Below measurable level
Gain control	Selectable: 0dB, +6dB, +12dB, +18dB
Special functions	ELECTRONIC SHUTTER Selectable speed 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000 Continuously Variable speeds 1/60 to 1/250 Super EVS (Enhanced Vertical definition System) Selectable mixing ratio of interlaced line 0.125, 0.25, 0.375, 0.5, 0.625 0.75, 0.875
Connectors	Lens (12-pin), Lens power (4-pin), View finder (12-pin)
Power requirements	DC 10.5V to 17V
Power consumption	30W
Operating temperature	−20°C to 40°C (−4°F to 104°F)
Dimensions	177(W) × 179(H) × 164(D)mm (7 × 7 1/8 × 6 1/2 inches)
Weight	4.6 kg (10 lb 10 oz)
Supplied accessories	Tripod attachment (1) Carrying case (1) Extension board (1) Operation guide (1) Maintenance manual (1)

CCU ADAPTOR (for CCU operation system) (HDCA-350)

Outputs	MONITOR OUT (BNC): 1.0Vp-p, 75Ω SCRIPT (4-pin): 12V, 5W
Intercom	INTERCOM (XLR 5-pin × 2): Mic on/off
Connectors	CCU (11-pin) for HDCS-350 VF OUT (12-pin) VF POWER OUT (4-pin) for HDVF-75 AUX 12V OUT (4-pin)
Special function	Frame & Center mark on/off VF video select Filter select
Power consumption	5W
Dimensions	165(W) × 156(H) × 127(D)mm (6 1/2 × 6 1/4 × 5 inches)
Weight	1.7 kg (3 lb 11 oz)
Supplied accessories	110 Jack type intercom panel (1) Operation manual for HDC-500, HDCA-350, HDCO-350, HDCS-350 (1) Operation guide (1) Maintenance manual (1)

CAMERA SIGNAL PROCESSOR (HDCS-350)

Signal Standard	SMPTE 240M, BTA-S001
Outputs	G(Y), B(Pb), R(Pr), Y OUT (BNC × 4 each) 1.0Vp-p, w/sync, 0.7Vp-p, w/o sync switchable, 75Ω SYNC OUT (BNC × 4): ±0.3V, 75Ω PIC MONI OUT (BNC, XLR 7-pin): 1Vp-p, 75Ω tally signal for HDM-90/145 WF MONI OUT (BNC × 4, 15-pin): video 0.7Vp-p, sync ±0.3V, control signal for 1730HD
Inputs	RETURN VIDEO (BNC × 2): 1Vp-p, 75Ω GENLOCK SYNC (BNC): Sync ±0.3V, 75Ω
Intercom	TALLY (19-pin): Red and green tally signal INTERCOM (19-pin/XLR 3-pin) PGM (19-pin): 0dBm/−20dBm (switchable)
Power requirements	AC 100V to 120V/220V to 240V ±10% selectable 50/60Hz
Power consumption	750 VA (with HDC-500, HDCA-350, HDCO-350, HDVF-75)
Dimensions	Approx. 424(W) × 221(H) × 486(D)mm (16 3/4 × 8 3/4 × 19 1/4 inches)
Weight	Approx. 33 kg (72 lb 12 oz)
Supplied accessories	Connecting cable (for HDCO-350) (1) Connecting cable (for waveform monitor) (1) Connecting cable (for picture monitor) (1) 19-pin plug (1) 19-inch rack mount bracket (1) AC power cord (2) Extension board (1) Operation guide (1) Maintenance manual (1)

CAMERA OPERATIONAL CONTROL UNIT (HDCO-350)

Lens	IRIS: Automatic/Manual, close FOCUS: Remote control operation on/off
Levels	CONTROL DATA: PRESET/MEMORY switched PEDESTAL: MASTER/R/B GAIN: G/R/B, Master gain 0dB/+6dB/+12dB/+18dB selectable Color gain D58 FLARE: G/B/R GAMMA: OFF/VARIABLE/Fix selectable, Black (continuously adjustable within each range except for OFF) KNEE: MASTER/AUTO/OFF SLOPE: MASTER WHITE SHAD: Vertical SAW
Camera head	CHU POWER: Power on/off SHUTTER: 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000 selectable 1/60 to 1/250 variable Super EVS: 0.125, 0.25, 0.375, 0.5, 0.625, 0.75, 0.875 selectable Automatic white balance Automatic black balance Automatic time delay compensation AUTO SETUP: Level (pedestal/gain/flare/gamma)
Digital Image Enhancement levels	Crisp, Level dependence, Limit curve, Limit level Boost frequency, V ratio Detail gain *Detail signals detected from R/G/B/R + G/B + G/R + G + B*
Monitor outputs	PIC MONI: G/B/R/Y/NAM Y WFM: G/B/R/SEQ/Y/R + B/R + G/B + G/G/BR
Intercom	INTERCOM: COMM/PRIV switched AUX INTERCOM: 4 wires, 600Ω, 0dBm or RTS system
Buzzer	Buzzer on/off
Dimensions	Approx. 424(W) × 100(H) × 440(D)mm (16 3/4 × 4 × 17 1/4 inches)
Weight	Approx. 9.5 kg (20 lb 15 oz)
Supplied accessories	Rack mount assembly (3U) (1) Intercom panel assembly (for 110 Jack type) (1) Operation guide (1) Maintenance manual (1)

REMOTE CONTROL PANEL (HDCR-350)

Power requirements	DC 10.5V to 17V
Power consumption	4W
Maximum cable length	200m (656ft) when used with HDCS-350 20m (66ft) when used with either HDCA-50 or HDCD-50
Dimensions	136(W) × 315(H) × 67(D)mm (5 3/8 × 12 1/2 × 2 5/8 inches)
Weight	2.1kg (4 lb 10 oz)
Supplied accessories	Joystick iris control unit (1) Connecting cable (for HDCS-350) (1) Connecting cable (for HDCS-50) (1) 6-pin plug (for preview) (1) Operation manual (1) Maintenance manual (1)

CAMERA ADAPTOR (for stand-alone system) (HDCA-50)

Signal standard	SMPTE 240M, BTA-S001
Output signals	G(Y), B(PB), R(PR) OUT (HDCZ 26-pin): 1.0Vp-p, 75Ω G, B, R/Y, PB, PR selectable MIC OUT (HDCZ 26-pin): −20dBm MONITOR OUT (BNC): 1.0Vp-p, 75Ω
Input signals	GENLOCK SYNC (HDCZ 26-pin): ±0.3Vp-p, 75Ω RETURN VIDEO (HDCZ 26-pin): 1.0Vp-p, 75Ω MIC IN 2CH (XLR 3-pin): −60dBm/−40dBm/−20dBm selectable +48V power supply to external condenser microphone on/off
Outputs	Script DC out: DC 10.5V to 17V Earphone out: mini jack
Connectors	Viewfinder (12-pin): for HDVF-500, HDVF-150, HDVF-3G Intercom (XLR): Mic on/off switchable Remote (12-pin): for HDCR-50, HDCR-350
Power requirements	DC IN (XLR 4-pin/HDCZ 26-pin): DC 10.5V to 17V
Power consumption	14W
Dimensions	165(W) × 155(H) × 114(D)mm (6 5/8 × 6 1/8 × 4 1/2 inches)
Weight	1.9 kg (4 lb 3 oz)
Supplied accessories	Operation manual for HDC-500, HDCA-50, HDCD-50, HDCR-50, HDCH-500 (1) Operation guide (1) Maintenance manual (1)

SIGNAL DISTRIBUTOR (HDCD-50)

Outputs	G(Y), B(PB), R(PR) OUT BNC × 2 each: selected in HDCA-50, 1.0Vp-p, 75Ω MONITOR OUT (BNC): 1.0Vp-p, 75Ω MIC OUT CH1/2 (XLR 3-pin): 600Ω balanced
Inputs	RETURN VIDEO (BNC): 1.0Vp-p, 75Ω GENLOCK SYNC (BNC): ±0.3Vp-p, 75Ω
Intercom	INTERCOM (19-pin/XLR 3-pin) PGM (19-pin): 0dBm/−20dBm switchable TALLY (19-pin): Red and Green tally
Power requirements	AC IN: AC 100V to 120V/220V to 240V ±10%, 50/60Hz DC IN: DC 10.5V to 17V
Power consumption	AC IN: 380VA (with HDC-500, HDCA-50, HDVF-150) DC IN: 9W (with only HDCD-50)
Dimensions	200(W) × 118(H) × 336(D)mm (7 7/8 × 4 3/4 × 13 1/4 inches)
Weight	Approx. 7 kg (15 lb 7 oz)
Supplied accessories	Extension Board (1) Mail XLR 3-pin MIC panel (1) 110 jack intercom panel (1)

5-INCH VIEWFINDER (HDVF-500)

Power consumption	16W
Input	Composite video
Aspect ratio	16:9
Picture size	54(H) × 96(W)mm (2 1/8 × 3 7/8 inches)
Resolution	650 TV lines
Dimensions	191(W) × 186(H) × 291(D)mm (7 5/8 × 7 3/8 × 11 1/2 inches)
Weight	1.8kg (4 lb 3 oz)
Supplied accessories	Connecting cord Indoor hood (1) V-wedge shoe attachment (1) Operation and maintenance manual (1)

7-INCH VIEWFINDER (HDVF-770)

Signal standard	SMPTE 240M, BTA-S001
Power consumption	28 W
Input	Composite video
Aspect ratio	16:9
Picture size	68(H) × 120(W)mm (2 3/4 × 4 3/4 inches)
Resolution	Center: 800 lines
Dimensions	265(W) × 180(H) × 321(D)mm (10 1/2 × 7 1/8 × 12 3/4 inches)
Weight	Approx. 5 kg (11 lb)
Supplied accessories	Indoor hood (1) Outdoor hood (1) Carrying case (1) Operation and maintenance manual (1)

9-INCH MONOCHROME MONITOR (HDM-90)

Signal standard	SMPTE 240M, BTA-S001
Power requirements	AC 100/120/220/240V ±10%, 50/60Hz
Power consumption	60W
Inputs	Video(BNC): 1Vp-p with tri-level sync 75Ω Sync(BNC): ±0.3V, 75Ω Tally
Aspect ratio	16:9
Picture size	92(H) × 164(W)mm (3 5/8 × 6 1/2 inches)
Resolution	Center: 850 TV lines
Operating temperature	0°C to 40°C (32°F to 104°F)
Operating humidity	10 to 90%
Dimensions	Approx. 220(W) × 215(H) × 350(D)mm (8 3/4 × 8 1/2 × 13 3/4 inches)
Weight	Approx. 12 kg (26 lb 6 oz)
Supplied accessories	AC power cord (2) Tally connector (XLR 7-pin) Operation and maintenance manual (1)

14-INCH MONOCHROME MONITOR (HDM-145)

Signal standard	SMPTE 240M, BTA-S001
Power requirements	AC 100/120/220/240V ±10%, 50/60Hz
Power consumption	90W
Inputs	Video (BNC): 1Vp-p with tri-level sync 75Ω Sync (BNC): ±0.3V, 75Ω Tally
Aspect ratio	16:9
Picture size	143.5(H) × 225(W)mm (5 3/4 × 10 1/4 inches)
Resolution	Center: 1000 TV lines
Operating temperature	0°C to 40°C (32°F to 104°F)
Operating humidity	10 to 90%
Dimensions	Approx. 424(W) × 291(H) × 441(D)mm (16 3/4 × 11 1/2 × 17 3/8 inches)
Weight	Approx. 24 kg (52 lb 15 oz)
Supplied accessories	Rack mount bracket (1 set) AC power cord (2) Tally connector (XLR 7-pin) Operation and maintenance manual (1)

OPTICAL FIBER TRANSMISSION SYSTEM

GENERAL SPECIFICATIONS OF OPTICAL FIBER TRANSMISSION SYSTEM

Transmission signals	All signals between the HDCA-350 and the HDSC-350 Six channels of digital audio signals
Transmission distance	250m/500m/750m/1km (with use of the FC6E-PA10 cable extension connectors)
Video	
Input/output	G/B/R analog component signals
S/N ratio	More than 47 dB (1 km transmission)
Frequency response	60Hz to 30MHz
Audio	
Frequency response	20Hz to 20KHz
S/N ratio	More than 60dB at – 60dBs IN (1km transmission)
T.H.D	Less than 0.05% at – 60dBs IN (1km transmission)
Head room	More than 20dB
Input	
Analog	– 60dBs/ – 40dBs/ – 20dBs/ + 4dBs (2 channels)
Digital	AES/EBU format (4 channels)
Output	
Analog	– 20dBs/ + 4dBs (2 channels, selectable)
Digital	AES/EBU format (6 channels)
Operating temperature	0°C to 40°C (32°F to 104°F)

OPTICAL FIBER TRANSMITTER (HDFT-300)

Input	G/B/R analog component video (11-pin multiple connector) Analog audio (XLR 3-pin, 2 channels) Digital audio (XLR 3-pin, 4 channels)
Output	V.F out (11-pin multiple connector) Sync out (11-pin multiple connector) Digital audio sync out (XLR 3-pin)
Power requirements	DC 150V (supplied from the HDFR-300)
Power consumption	Max. 300W
Dimensions	Approx. 316(W) × 116(H) × 286(D)mm (12 1/2 × 4 5/8 × 11 3/8 inches)
Weight	Approx. 5kg (11 lb)
Supplied accessories	Carrying case (1) Multicore cable (HDCC-5A) (1) Shoulder belt (1) Maintenance manual (1)

OPTICAL FIBER RECEIVER (HDFR-300)

Input	V.F in)11-pin multiple connector) Sync in (11-pin multiple connector)
Output	G/B/R analog component video (11-pin multiple connector) Analog audio (XLR 3-pin, 2 channels) Digital audio (XLR 3-pin, 6 channels)
Power requirements	AC 100V to 120V/220V to 240V, 50/60Hz
Power consumption	Max. 400W
Dimensions	Approx. 423(W) × 88(H) × 450(D)mm (16 3/4 × 3 1/2 × 17 3/4 inches)
Weight	Approx. 12 kg (26 lb 7 oz)
Supplied accessories	AC power cord (1) Multicore cable (HDCC-2A) (1) Rack mount assembly (1) Maintenance manual (1)

OPTICAL FIBER CABLE (FC6-PA250/500)

Cable length	250m (FC6-PA250), 500m (FC6-PA500)
Fiber type	G.I type, 80/150μm diameter (internal/external)
Connector	Optical multi-connector
Optical fiber loss	Less than 4dB/km
Dimensions	FC6-PA250 (with a reel): Approx. 520(W) × 680(H) × 440(D)mm (20 1/2 × 26 7/8 × 17 3/8 inches) FC6-PA500 (with a reel): Approx. 600(W) × 790(H) × 440(D)mm (25 5/8 × 31 1/8 × 17 3/8 inches)
Weight	FC6-PA250 (with a reel): 55 kg (121 lb 4 oz) FC6-PA500 (with a reel): 85 kg (187 lb 6 oz)

CABLE EXTENSION CONNECTOR (FC6E-PA10)

Connection loss	Less than 1dB
Dimensions	Approx. 36ø × 32mm (1 7/16 × 1 1/16 inches)
Weight	Approx. 150g (5 oz)

POST PRODUCTION EQUIPMENT

SWITCHER (HDS-1000T)

Signal Standard	SMPTE 240M
Video input	VS × 7, RGB component
Title input	VS × 2, B/W
Program output	VS × 2, RGB component
Preview output	VS × 1, RGB component
Return video output	VS × 1, RGB component
Sync output	Tri-sync × 2, ±0.3Vp-p
Differential gain	Less than 2% at 50% APL
Frequency response	20MHz ±0.3dB – 30MHz $^{+1}_{-3}$ dB
Cross talk	– 40dB at 30MHz
Path length deviation	Less than ±0.2dB
Power requirements	AC 100 to 120/220 to 240V
Power consumption	160W
Dimensions	Approx. 450(W) × 150(H) × 420(D)mm (17¾ × 6 × 16⅝ inches)
Weight	Approx. 13 kg (28 lb 11 oz)

Digital EBR System

Video Interface	Input: Y, P_R, P_B/8-bit parallel interface (Clock frequency: 74.5 MHz, conforms to SMPTE 240M) Bandwidth: 30 MHz
EBR Interface	signal: G, B, R, Time Division Multiplex Output/10-bit parallel interface (Clock frequency: 59.4 MHz)
Film speed	24 frames/s, 30 frames/s
Film size	35mm
Operation	Microcomputer aided

VTR SYSTEM

DIGITAL VTR (HDD-1000)

GENERAL		
Signal Standard	SMPTE 240M	
Power requirements	AC 100 to 120/220 to 240V ±10%, 50/60Hz	
Power consumption	550W	
Operating temperature	5°C to 35°C (41°F to 95°F)	
Storage temperature	– 20°C to 60°C (– 4°F to 140°F)	
Humidity	10% to 85% (non-condensing)	
Weight	Approx. 67 kg (147 lb 11 oz)	
Dimensions	Approx. 480(W) × 680(H) × 572(D)mm (19 × 26⅞ × 22⅝ inches)	
Tracks	Video tracks: 8 Audio tracks: 8 CTL tracks : 1 T/C tracks : 1 Cue tracks : 1	
Tape speed	80.5cm/s	
Writing speed (Relative speed)	51.5m/s	
Recording time	83 min with 11.75-inch reel	
Fast forward/Reverse speed	Approx. 5 minutes	
Recommended tapes	Sony's 1-inch High Density Tape or equivalent	
Reel size	NAB Standard, 8.5 to 11.75 inch reel	
Input/Output		
Audio	LINE INPUT	CUE: XLR 3-pin TIME CODE: XLR-3-pin
	LINE OUTPUT	CUE: XLR 3-pin TIME CODE: XLR 3-pin
	MONITOR OUT	R/L: XLR 3-pin HEADPHONES: Stereo
	TO PROCESSOR	CN-1: D-sub 50-pin
Video	TO PROCESSOR	CN-2: D-sub 50-pin CN-3: D-sub 50-pin
REMOTE	SERIAL REMOTE	REMOTE-1: for BVH-1000/1100 through BKH-2016 D-sub 15-pin REMOTE-2A IN: 9-pin remote REMOTE-2A OUT: 9-pin remote REMOTE-2B IN/OUT: 9-pin remote AUX: for external WFM select, D-sub 9-pin
	PARALLEL REMOTE	REMOTE-3: D-sub 50-pin

VIDEO (with HDDR1000)	
Signal system	Y P_R P_B
Signal-to-noise ratio	Better than 56dB (full band, unweighted)
Quantization	8 bits
Sampling rate	74.25MHz
Bandwidth	DC to 30MHz 0 - 1.5dB (luminance) DC to 15MHz 0 - 1.5dB (chrominance)
K factor	Less than 1%, 2T pulse
Phase error of each component channel	Less than 3.5 ns
AUDIO	
Frequency response	20Hz to 20kHz $^{+1}_{-3}$ dB
Crosstalk (at 1kHz)	Less than – 80dB (between any two channels)

VTR SIGNAL PROCESSOR (HDDP-1000)

GENERAL		
Power requirements	AC 100 to 120/220 to 240V ±10%, 50/60Hz	
Power consumption	1200W	
Operating temperature	5°C to 35°C (41°F to 95°F)	
Storage temperature	−20°C to 60°C (−4°F to 140°F)	
Humidity	10% to 85% (non-condensing)	
Weight	Approx. 100kg (220 lb)	
Dimensions	Approx. 483(W) × 650(H) × 630(D)mm (19 × 25⅝ × 24⅞ inches)	
Input/Output		
Video	VIDEO IN	G/Y, B/PB, R/PR (BNC, 2 inputs) EXT SYNC (BNC, 1 input)
	VIDEO OUT	G/Y, B/PB, R/PR (BNC, 2 output) EXT SYNC (BNC, 2 outputs)
	MONITOR OUT	G/Y, B/PB, R/PR (BNC, 1 output) EXT SYNC (BNC, 1 output)
	WFM OUT	G/Y, B/PB, R/PR (BNC, 1 output) EXT SYNC (BNC, 1 output)
	TO VTR	CN-2: D-sub 50-pin CN-3: D-sub 50-pin
	DIGITAL VIDEO IN/OUT	DIGITAL VIDEO IN: D-sub 50-pin DIGITAL VIDEO OUT: D-sub 50-pin
Audio	ANALOG AUDIO IN	XLR 3-pin (8 channels)
	ANALOG AUDIO OUT	XLR 3-pin (8 channels)
	DIGITAL AUDIO IN	XLR 3-pin (4 channels)
	DIGITAL AUDIO OUT	XLR 3-pin (4 channels)
	DIGITAL AUDIO	PARALLEL IN: D-sub 15-pin
	DIGITAL AUDIO	PARALLEL OUT: D-sub 15-pin
	TO VTR	CN-1: D-sub 50-pin
	REMOTE	RS-232C

HD TAPES (HD-1D SERIES)

	HD-1D-33A	HD-1D-48A	HD-1D-63A
Reel size (inch)	10.5	10.5	11.75
Length m (feet)	1,620 (5,344)	2,330 (7,689)	3,080 (10,164)
Playing time* (min)	33	48	63
Weight** kg	3.0 (6 lb 10 oz)	3.8 (8 lb 6 oz)	5.0 (11 lb)
Case type	Shipper case	Shipper case	Shipper case

*Tape speed = 80.5cm/sec
**With case

VTR CONTROL UNIT (HDDR-1000)

Power requirements	AC 100 to 240V ±10%, 50/60Hz
Power consumption	Approx. 25W max.
Dimensions	446(W) × 129(H) × 260(D)mm (17⅝ × 5⅛ × 10¼ inches)
Weight	Approx. 6.5 kg (14 lb 5 oz)
Remote	
Serial remote	
REMOTE R	9-pin remote
REMOTE P	9-pin remote
AUX	D-sub 9-pin
Parallel remote	
REMOTE	D-sub 25-pin
Supplied accessory	Rack mount kit

AUDIO REMOTE CONTROL UNIT (HDDR-A1000)

Power requirements	AC 100 to 240V ±10%, 50/60Hz
Power consumption	Approx. 15W max.
Dimensions	424(W) × 84(H) × 123(D)mm (16¾ × 3⅜ × 4⅞ inches)
Weight	Approx. 3 kg (6 lb 10 oz)
Remote	
HOST	D-sub 9-pin
ADDITION	D-sub 9-pin
SPARE for a custom made control unit	D-sub 25-pin
Supplied accessory	Rack mount kit

VIDEO REMOTE CONTROL UNIT (HDDR-V1000)

Power requirements	AC 100 to 240V ±10%, 50/60Hz
Power consumpoon	Approx. 10W max.
Dimensions	214(W) × 133(H) × 301(D)mm (8⅜ × 5¼ × 11⅞ inches)
Weight	Approx. 3.5 kg (7 lb 11 oz)
Remote	
HOST	D-sub 9-pin
ADDITION	D-sub 9-pin
WFM out	D-sub 15-pin
SPARE for a custom made control unit	D-sub 25-pin
Supplied accessory	D-sub 15-pin cable

VIDEOCASSETTE RECORDER (HDV-10)

GENERAL

Power requirements	AC 100 to 120V/200 to 240V ± 10% selectable, 50/60Hz
Power consumption	Max. 450W
Operating temperature	10°C to 35°C (50°F to 95°F)
Humidity	25% to 80%
Weight	Approx. 50 kg (110 lb 4 oz)
Dimensions	424(W) × 331(H) × 626(D)mm (16¾ × 13⅛ × 24⅞ inches)
Recording format	UNIHI format
Tracks/channels	Video 6 tracks/1 field Digital audio 2 tracks Analog audio (cue) 1 track Time code 1 track CTL 1 track
Tape speed	119.7mm/s
Writing speed (Relative speed)	21.4m/s
Recording time	Max. 63 minutes
Cassette type	UNIHI videocassette
Servo lock time	Within 2 s (stand by on start)
Load/unload time	Within 7 s
Fast forward/rewind time	Within 150 s

VIDEO

Video Bandwidth	Y 20MHz P_B, P_R 7 MHz (line sequential)
S/N ratio	Y 57dB P_B, P_R 43dB

AUDIO

Sampling frequency	48KHz
Quantization	16 bits/sample
Frequency response	DA 1-4: 20Hz to 20KHz + 0.5dB – 1.0dB CUE 100Hz to 10KHz ± 3dB
S/N ratio (dynamic range)	DA 1-4: More than 90dB CUE More than 45dB
Distortion	DA 1-4: Less than 0.05% CUE Less than 2%
Crosstalk	Less than – 80dB
Wow & flutter	DA 1-4: Below measurable limit CUE Less than 0.2% (NAB unweighted)
Head room	DA 1-4: 18dB CUE 9dB
Emphasis	T1 = 50μs/T2 = 15μs

Input/Output signal

Video		
Input		
	G, B, R/Y, P_B, P_R	1.0Vp-p, 75Ω (loop-through)
Output		
	G, B, R/Y, P_B, P_R	1.0Vp-p, 75Ω, 2 channels
	Monitor	1.0Vp-p, 75Ω, (G, B, R) 1.0 Vp-p, 75Ω (Y)
Audio		
Input		
Analog		
	CH 1-4	– 16dBm to + 10dBm, balanced 150Ω/600Ω/10kΩ
	CUE Line in	– 16dBm to + 16dBm, balanced 600Ω or 10kΩ
	Mic in	– 60dBs, 3kΩ
Digital		
	CH 1-4	AES/EBU format
Output		
Analog		
	CH 1-4	+ 4dBm, balanced, 600Ω
	CUE	+ 4 dBm, balanced, 600Ω
	Monitor L/R	+ 4dBm, balanced, 600Ω
	Headphone	8Ω, unbalanced
Digital		
	CH 1-4	AES/EBU format
Time code		
	Input	SMPTE/EBU time code, 600Ω, balanced
	Output	SMPTE/EBU time code, balanced
Remote		
	Remote in	For RS-422 serial interface, D-sub 9-pin
	Remote out	For RS-422 serial interface, D-sub 9-pin
	Remote in/out	For RS-422 serial interface, D-sub 9-pin
	RS-232C	For RS-232C interface, D-sub 25-pin

VIDEOCASSETTE TAPE (HCT-63)

Tape length	Approx. 465m (1926 ft.)
Tape width	12.65mm (½-inch)
Recording time	63 min
Weight	Approx. 497 g (1 lb 2 oz)
Dimensions	205(W) × 25(H) × 121.5(D)mm (8⅛ × 1 × 4⅞ inches)

VIDEODISC RECORDER (HDL-5800)

GENERAL	
Signal standard	SMPTE 240M, BTA-S001
Power requirements	AC 100 to 120V/220 to 240V, 50/60Hz
Power consumption	Approx. 350W
Operating temperature	5°C to 35°C (41°F to 95°F)
Humidity	30 to 70%
Weight	Approx. 39 kg (85 lb 15 oz)
Dimensions	436 × 332 × 643mm (17 ⅛ × 13 ⅛ × 25 ⅜ inches)

RECORDING/PLAYBACK SYSTEM	
Recording mechanism	Alloy mode
Laser	Semiconductor diode laser (λ: 780nm)
Laser output power	35mW × 2
Maximum playback/ recording time & frames	CAV: 3 min/side, 5400 frames/side CLV: 10 min/side, 18000 frames/side Read-only disc CAV: 8 min/side CLV: 15 min/side
Spindle speed	CAV: 1800r/min CLV: 1200 to 3000r/min
Access time	0.6s in CAV mode (full stroke average) 15s in CLV mode (full stroke average)

VIDEO	
Video Bandwidth	Y: 20MHz, P_R/P_B: 6MHz
S/N Ratio	Y: 42dB (WHD-3AA0/3AL0) Y: 41dB (read-only disc)

AUDIO	
Sampling frequency	48kHz
Quantization	16 bits (linear)/sample (2-channel) 12 bits (non-linear)/sample (4-channel)
Frequency response	30Hz to 20kHz ± 1dB
S/N ratio (dynamic range)	More than 85dB
Distortion	Less than 0.04%
Crosstalk	Less than – 63dB
Head room	20dB
Emphasis	Analog input: 50μs/flat (automatic selection) Digital input: 50μs/flat (ON/OFF, selectable)

INPUT/OUTPUT SIGNAL	
Video	
Input	
G, B, R/Y, P_B, P_R	1.0Vp-p, 75Ω, loop-through BNC
Output	
G, B, R/Y, P_B, P_R	1.0Vp-p, 75Ω, BNC
Monitor	1.0Vp-p, 75Ω, BNC
Audio	
Input	
Analog	
CH 1-4/1-2	– 8dBs to + 10dBs, balanced 600Ω/10kΩ switchable, XLR – 15dBs to – 5dBs, unbalanced 10kΩ, Phono
Digital	
CH 1-4/1-2	AES/EBU format, XLR
Output	
Analog	
CH 1-4/1-2	+ 4dBs, balanced, 600Ω, XLR – 5dBs, unbalanced, 10kΩ, Phono
Headphone	8Ω, unbalanced, Phone
REMOTE	
REMOTE 1 IN	For RS-232C interface D-sub 25-pin
REMOTE 2 IN	For Sony 9-pin serial interface, D-sub 9-pin
REMOTE 2 OUT	For Sony 9-pin serial interface, D-sub 9-pin

SUPPLIED ACCESSORIES
Remote Control Unit RM-5800
RS-232C I/F manual
9-pin Remote I/F manual
Read-only disc tray
Rack angle (1 pair)
AC power cord
Operation manual

OPTIONAL ACCESSORIES
Laser VideoDisc Media for CAV mode WHD-3AA0
Laser VideoDisc Media for CLV mode WHD-3AL0
Programmable remote controller RM-9000PR
Foot switch FS-20

WRITABLE LASER VIDEODISC MEDIA (WHD Series)

	WHD-3AA0	WHD-3AL0
Recording system	CAV mode	CLV mode
Disc diameter	300mm (12-inch)	
Cartridge Dimension	325 × 345 × 16mm (12 ⅞ × 13 ⅝ × 5/8 inches)	
Weight	980 g (2 lb 3 oz)	

DIGITAL FRAME RECORDER (HDDF-500)

GENERAL	
Signal standard	SMPTE 240M 1125 line, 2:1 interlace, 60Hz 1035 active lines
Power requirements	AC 100 to 120V/220 to 240V ± 10%, 50/60Hz
Power consumption	400W max.
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	– 20°C to 60°C (– 4°F to +140°F)
Humidity	10% to 85% (non-condensing)
Weight	33 kg (72 lb 12 oz)
Dimension	424(W) × 241(H) × 555(D)mm (16¾ × 9½ × 21⅞ inches)
VIDEO	
Sampling rate	74.25MHz in each G, B, R channel
Quantization	8 bit/sample
Capture	8 to 32 frames or 16 to 64 fields (G, B, R)
Display	Frame or field (selectable)
Memory content	1920(H) × 1040(V) pixels per frame (R, G, B) 2M byte per frame each channel
Frequency response	0 to 27MHz: ± 0.5dB 0 to 30MHz: – 1.5dB ± 0.5dB
K factor	Less than 1% (HDTV 2T - 66ns HAD)
Tilt	Less than 1% (Horizontal and vertical)
S/N ratio	More than 56dB
Sync jitter	Less than 2ns
Input/Output signal	
Input	
Analog	G, B, R: 1Vp-p ± 2dB (75Ω BNC per channel)
Digital	D-sub 25-pin (one per channel)
Reference	Composite video: 1Vp-p ± 3dB or Sync (Tri Level): ± 0.3V (BNC, loop-through)
Output	
Analog	G, B, R: 1Vp-p (0.7Vp-p video into 75Ω, ± 0.3V Tri Level sync) (BNC, three outputs per channel)
Digital	D-sub 25-pin (one per channel)
Remote 1, 2	9-pin remote
Computer parallel interface	DRV-11WA (for Q bus system) DR-11W (for Unibus system)
Audio Processing	None
SCSI interface	ANSI × 3.131-1986, 50-pin shielded connector

VIDEODISC PLAYER (HDL-2000)

Signal standard	SMPTE 240M
Power requirements	AC 100 to 120V/220 to 240V (± 10%)
Power consumption	350W
Video	
S/N	42dB (Y)
Bandwidth	20MHz (Y) 6MHz (C)
Audio	
Frequency bandwidth	20Hz to 20kHz (± 1dB)
Harmonic distortion	Less than 0.05%
Dynamic range	90dB
Channel crosstalk	– 80dB
Wow and flutter	Below measurable levels
Input/Output	
VIDEO OUT	G/Y, B/P_B, R/P_R (BNC, 2 outputs)
REF VIDEO IN	Loop-through BNC
AUDIO OUT	CH-1/CH-2 (XLR 3-pin, 2 channels)
REMOTE	RS-232C
SPARE	D-sub 9-pin
Weight	Approx. 35.2 kg (77 lb 10 oz)
Dimensions	Approx. 436(W) × 286(H) × 608(D)mm (6 rack units) (17⅛ × 11⅜ × 24 inches)

NTSC DOWN-CONVERTER (HDN-2000)

Signal standard	SMPTE 240M/SONY sync
Power requirements	AC 100 to 120V/220 to 240V ± 10% (50/60Hz ± 5%)
Power consumption	800W
Inputs	
High definition video	SMPTE 240M (G/B/R)
NTSC sync	Black burst (through input)
Outputs	
NTSC composite	Based on EIA RS-170A (× 3)
NTSC component	G/B/R or Y/B-Y/R-Y
DUB/component	12-pin for Betacam VTRs
High definition video	Waveform, monitor (with cursor), sync
Dimensions	436(W) × 650(H) × 630(D)mm (17⅛ × 25⅝ × 24⅞ inches)
Weight	Approx. 95 kg (209 lb 7 oz)

SYNC CONVERTER (HDSC-1000)

Signal standard		SMPTE 240M/SONY sync TSUKUBA EXPO. sync
Power requirements		AC 100 to 120V (90 to 132V)/220 to 240V (198 to 264V) 50/60Hz
Power consumption		100W
Frequency characteristics		0 to 30MHz ± 0.5dB
S/N		55dB
Inputs:	Video	Channels 1/2 (G/Y, B/P_B, R/P_R)
	Sync	Channels 1/2
Outputs:	Video (1/2)	Channels 1/2 (G/Y, B/P_B, R/P_R)
	Sync (1/2)	Channels 1/2
Weight		Approx. 9.5 kg (21 lb)
Dimensions		Approx. 424(W) × 88(H) × 516(D)mm (16¾ × 3½ × 20⅜ inches)

DISPLAY SYSTEM

PROJECTION SYSTEM

	HDIH-1200/1200M, HDIH-2000/2000M, HDIH-3000/3000M	HDIR-550/550M
General		
Power requirements	AC 120V, 50/60Hz (HDIH-1200/2000/3000) AC 220 to 240V, 50/60Hz (HDIH-1200M/2000M/3000M)	AC 120V, 50/60Hz (HDIR-550) AC 220 to 240V, 50/60Hz (HDIR-550M)
Power consumption	Approx. 480W	Approx. 400W
Horizontal resolution	1000TV lines (at screen center)—HDTV input 700 TV lines (at screen center)—Composite video input	800TV lines (at screen center)—HDTV input 700TV lines (at screen center)—Composite video input
Vertical resolution	850TV lines (at screen center)—HDTV input	750TV lines (at screen center)—HDTV input
Frequency	H: 15kHz to 35kHz V: 50Hz to 120Hz	H: 15kHz to 35kHz V: 50HZ to 120Hz
Video bandwidth	30MHz	30MHz
Brightness	300 lm (peak white), 130 lm (all white)	200 ft-L (peak white), 50 ft-L (all white)
Input	G/Y, B/Pʙ, R/Pʀ, Sync/HD, VD (HDTV) × 2 lines: BNC, 75Ω terminated Composite video: BNC, 75Ω terminated Y/C: Din-4pin, 75Ω terminated Control S: Mini-jack	G/Y, B/Pʙ, R/Pʀ, Sync/HD, VD (HDTV) × 2 lines: BNC, 75Ω terminated Composite video: BNC, 75Ω terminated Control S: Mini-jack
Operating temperature	0°C to 40°C (32°F to 104°F)	0°C to 40°C (32°F to 104°F)
Dimensions	743(W) × 402(H) × 999(D)mm (29⅛ × 15⅞ × 39⅜ inches)	1340(W) × 1815(H) × 990(D)mm (52⅞ × 71⅝ × 39 inches)
Weight	99 kg (218 lb 4 oz)	220 kg (446 lb 14 oz)
Optical		
Projection system	3 picture tubes, 3 lenses, horizontal in-line system	3 picture tubes, 3 lenses, horizontal in-line rear projection system
Picture tube	9-inch high brightness, magnetic focus CRT Impre-cathode, LC^2 (Liquid Coupling and cooling) system	7-inch high brightness, optical coupling and liquid cooling system
Lens	High performance HACC lens, Anti-reflection coating F1.24, 1172mm (HDIH-1200/1200M) F1.25, 1174mm (HDIH-2000/2000M) F1.25, 1177mm (HDIH-3000/3000M)	High performance HACC lens, F1.1, 1116mm, multi-coating
Projection size	100 to 150-inch diagonally (120-inch, factory set)—HDIH-1200/1200M 150 to 220-inch diagonally (200-inch, factory set)—HDIH-2000/2000M 220 to 350-inch diagonally (240-inch, factory set)—HDIH-3000/3000M	55-inch diagonally
Screen	—	2 pieces type, black stripe coating
Optimum viewing angle	—	Horizontal: ±50°, Vertical: ±20°

COLOR MONITORS

	HDM-1230/1230E	HDM-1730/1730E	HDM-2830/2830E
Picture tube	Super Fine Pitch Trinitron 0.26mm phosphor trio pitch 12-inch visible picture measured diagonally	Super Fine Pitch Trinitron 0.31mm phosphor trio pitch 17-inch visible picture measured diagonally	Super Fine Pitch Trinitron 0.35mm phosphor trio pitch 28-inch visible picture measured diagonally
Picture height	151mm	217mm	349mm
Picture width	268mm	385mm	620mm
Aspect ratio	16 : 9	16 : 9	16 : 9
Resolution	Center: H 600 TV lines V 750 TV lines Corner: H 580 TV lines V 700 TV lines	Center: H 760 TV lines V 750 TV lines Corner: H 700 TV lines V 700 TV lines	Center: H 1000 TV lines V 750 TV lines Corner: H 950 TV lines V 750 TV lines
Input/output			
Video	G, B, R/Y, Pʙ, Pʀ with loop-through (BNC × 6)	G, B, R/Y, Pʙ, Pʀ with loop-through (BNC × 6)	G, B, R/Y, Pʙ, Pʀ with loop-through (BNC × 6)
Sync	Tri-level sync, bi-level sync, or HD/VD	Tri-level sync, bi-level sync, or HD/VD	Tri-level sync, bi-level sync, or HD/VD
Remote	10-pin connector	10-pin connector	10-pin connector
Frequency response	60Hz to 30MHz ±3dB	60Hz to 30MHz ±3dB	60Hz to 30MHz ±3dB
Linearity	DG: Less than 5%	DG: Less than 5%	DG: Less than 5%
Convergence	Center: Less than 0.3mm Corner: Less than 0.5mm	Center: Less than 0.4mm Corner: Less than 0.7mm	Center: Less than 0.5mm Corner: Less than 0.8mm
Color temperature	Preset mode: 6500K Manual mode: adjustable (6500K at ex-factory)	Preset mode: 6500K Manual mode: adjustable (6500K at ex-factory)	Preset mode: 6500K Manual mode: adjustable (6500K at ex-factory)
Power requirements	AC 100 to 120V, 220 to 240V ±10%, 50/60Hz	AC 100 to 120V, 220 to 240V ±10%, 50/60Hz	AC 100 to 120V, 220 to 240V ±10%, 50/60Hz
Power consumption	160W	230W	330W
Operating temperature	0°C to 40°C (32°F to 104°F)	0°C to 40°C (32°F to 104°F)	0°C to 40°C (32°F to 104°F)
Operating humidity	10% to 85% (non-condensing)	10% to 85% (non-condensing)	10% to 85% (non-condensing)
Dimensions	Approx. 480(W) × 284(H) × 512(D)mm (19 × 11⅜ × 20⅛ inches)	Approx. 480(W) × 456(H) × 528(D)mm (19 × 18 × 24⅛ inches)	Approx. 754(W) × 815(H) × 677(D)mm (29⅞ × 24⅛ × 26⅝ inches)
Weight	Approx. 26kg (57 lb 5 oz)	Approx. 43.2kg (95 lb 4 oz)	Approx. 92kg (202 lb 13 oz)

SONY

High Definition Video System

Design and specifications subject to change without notice.
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